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# *SENECIO PINACATENSIS* (ASTERACEAE), A NEW SPECIES FROM THE PINACATE REGION OF SONORA, MÉXICO

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## ABSTRACT

**Senecio pinacatensis**, a new species in the *Suffruticosi* complex, is described and illustrated. It is the only taxon endemic to the Pinacate volcanic complex of northwestern Sonora and might be a Pleistocene relict.

## RESÚMEN

Se describe **Senecio pinacatensis** como especie nueva en el complejo *Suffruticosi*. Es el único taxón endémico del complejo volcánico del Pinacate en el noroeste del estado de Sonora, y quizá es un relicto del Pleistoceno.

KEY WORDS: *Senecio*, Asteraceae, Sonoran Desert, México

During the preparation of the flora of the Pinacate region of northwestern Sonora, México (Felger, in prep.) a new species of *Senecio* was discovered. It is illustrated and described below.

**Senecio pinacatensis** Felger, *sp. nov.* (Fig. 1).

Herbae perennes suffruticosae ramis rectis fragilibus, striatis frondosisque, foliis carnosis sessilibus, plerumque 3.0-6.2 cm longis pinnatisectis, pinnis anguste linearibus patentibus aequaliter dispositis; inflorescentia pluricapitata campanulato-cylindracea; phyllaria 5.5-9.0 mm longa, incrassata, sulcata et dura ubi exsiccata,

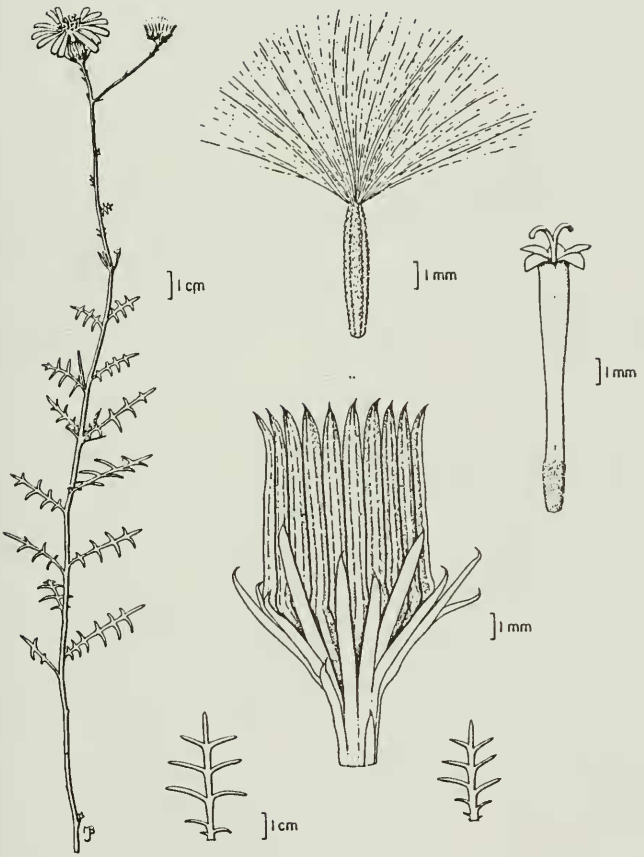


Figure 1. *Senecio pinacatensis* (from *Felger, Baker, & Joseph 87-54*). Drawing by Matthew B. Johnston.

apice calloso et saepe minutebarbulato; bracteae calyculatae phyllariis similes; ligulae 9-15+ mm longae; achaenia 4-6 mm longa, canescentia, pappi setae capillares albae. Chromosomatum numerus $2n = 40$. (Fig. 1).

TYPE: MÉXICO: Sonora, Pinacate Region, 1.1 km N of Pinacate Peak, 31°47′10″N, 113°29′18″W, 935 m, 13 Oct 1986, $2n = 40$, *Felger & Joseph 86-426* (HOLOTYPE: ARIZ; Isotypes: CAS, KSU,MEXU,RSA).

Short lived perennials to ca. 1.5 m tall, shrubby or semishrubby, flowering in first season or year, mostly sparsely branched. Stems straight, brittle, striate, and leafy; young herbage mostly densely white woolly, sometimes sparsely pubescent with soft white hairs or occasionally glabrate, at least a portion of each plant usually woolly; older herbage usually moderately white woolly to moderately to sparsely pubescent with soft white hairs, these tangled (arachnoid) to separate and appressed to spreading, or the stems sometimes glabrate or glabrous. Leaves fleshy, sessile, 3.0-6.2 cm long, pinnatisect with 3-7 pairs of widely and evenly spaced perpendicular linear segments, plus 1 or 2 very reduced basal pairs, the lowermost pair subulate and stipulelike, the longer segments of larger leaves (7-)10-20 mm long, 0.7-1.3 mm wide, opposite to subopposite; leaf rachis narrowly winged, 0.9-1.6 mm wide; leaf rachis and lobes grooved adaxially, thickish and somewhat flattened (appearing involute when dried), each segment terminating with a greenish white to pale yellowish (drying tan) conical callous tip 0.2-0.7 mm long.

Heads one to several at the tips of straight leafy stems, the peduncles often subtended by reduced leafy bracts, these evenly scattered or borne distally on peduncle. Involucre cylindrical, cylindrical campanulate to often slightly urceolate, 7.5-11.0 mm wide at the top when fresh, about as wide to slightly wider at the base; phyllaries 5.5-9.0 mm long, 19, 20, 21 or 24 in number, stiff, thickish, and succulent and green when fresh, more or less imbricate (the marginal portions of adjacent phyllaries mostly gripping each other in a tongue and groove pattern); phyllary midribs glabrous, more succulent than the margins, often invaginating when dry so that the phyllaries appear grooved; phyllary margins with minute trichomes, white tomentose or with arachnoid hairs, becoming thickened, yellowish and hardening when dry, the marginal areas themselves bordered with thin membranous and nearly transparent wings; phyllary apices short to long callous tipped and often with a small tuft of hairs; calyculate bracts (3-)4.0-5.5(-7) mm long, about as many as the phyllaries and of similar texture, color and morphology, intergrading with the peduncular bracts.

Corollas bright yellow; ray florets 11-14, the ligules 7.5-15.0+ mm long, 3.0-4.0 mm wide, minutely trilobed at tips, with 4 or 5 veins below, the veins clear yellow when fresh, becoming more prominent and brownish when dry,

the rays apparently largest in the relatively warmer fall season and smaller in the relatively cooler spring season; disk florets numerous, ca. (59-)70-78+ in number, ca. 8 mm long, the corollas tubular-salviform, the lower one half tubular, upper half moderately expanded into a throat. Styles faintly yellow below, darker above, the stigma branches yellow with few minute papillae at tips. Anthers linear, sagittate. Achenes 4-6 mm long, light brown, nearly cylindrical, appressed canescent with hairs in longitudinal rows on the low ridges. Pappus bristles 10-12 mm long, capillary, white, barbellate, nearly as long to slightly longer than the disk florets, ca. 95-105 in number. Flowering at least February to May, and again in October and November. Chromosome number, $2n = 40$ (D. Pinkava, 13 Jun 1988, from cultivated plant grown from *Felger 87-54*).

Paratypes: MÉXICO: Sonora. Pinacate Region: Near base of n side of large cinder cone, ca. 2 km nw of Pinacate Peak, 780 m, 23 Mar 1970, *Felger 19293* (ARIZ); sw slope of Carnegie Peak, 1050 m, steep cinder slope, scattered, weakly perennial, 21 Apr 1970, *Felger 19812* (ARIZ); Steep n facing cinder slope, ca. 0.5 km se of Carnegie Peak, 975 m, 21 Apr 1970, *Felger 19943* (ARIZ); ca. 0.5 km e of base of Carnegie Peak, ca. 930 m, 21 Apr 1970, *Felger, Sakaki, & Tucker 19917* (ARIZ,CAS,KSU,MEXU,TEX); 1.1 km n of Pinacate Peak, 31°47′05″N, 113°29′25″W, 950 m, 13 Oct 1986, *Felger & Joseph 86-435* (ARIZ,ASU,CAS,KSU,MEXU,RSA,TEX); e side of Sierra Pinacate, 31°46′N, 113°37′50″W, 650 m, in cinder soil, 1 Mar 1987, $2n = 40$ (D. Pinkava), *Felger, Baker, & Joseph 87-54* (ARIZ,ASU,CAS,MEXU,RSA,SD,UC). Cinder slopes of Pinacate Peak, 800 m, 31°46′N, 113°30′W, 25 Feb 1984, *Starr 730* (ARIZ).

*Senecio pinacatensis* is a member of the *Suffruticosi* group, which includes the *S. flaccidus* Less. complex (= *S. douglasii* DC. complex). Ediger (1970) recognized five species in the *Suffruticosi* group. Barkley (1978) placed six species in the group, adding *S. lyonii* A. Gray. However, there are serious unresolved taxonomic problems, especially among the *S. flaccidus-monoensis* complex in Sonora, and the entire group needs revision (T.M. Barkley, pers. comm. 1991). *Senecio pinacatensis* seems closely allied to the widespread *S. flaccidus* complex. There are no other members of the *Suffruticosi* in the immediate region (northwest Sonora, including the Pinacate region, west of México Highway 8, which extends from Sonoyta to Puerto Peñasco).

In the new species the appearance of the leaves, their texture, width of the segments, color, and pubescence most closely resembles that of some specimens of the *S. flaccidus* complex (see Turner & Barkley 1990). Noteworthy distinctions in *S. pinacatensis* are the relatively permanent, woolly pubescence, the leaves with their evenly spaced perpendicular segments (spreading at right angles), the rigid, straight stems, open, sparsely branched shrubs with branching at near right angles, and unusual habitat. The phyllaries of the Pinacate plants are similar to those of other members of the *S. flaccidus* complex. Unlike members of the *S. flaccidus* group, the pattern of stem branching in the

new species is not one of arching upward from the base. The high number of pappus bristles seems striking but it is not known if this is an unique feature. It seems appropriate to describe the new taxon at the species level rather than infraspecific rank because it stands out as morphologically and geographically isolated, the distinctions being as strong as between other members of the *Suffruticosi* complex.

The new species is known only from higher elevations of the main mountain mass of the Pinacate volcanic complex (Sierra Pinacate or Sierra Santa Clara) in northwestern Sonora where it occurs from about 750 m to nearly peak elevation at 1290 m. It is locally common in scattered places on cinder soils and among rocks on the north and northeast side of the mountain, often on steep slopes. During favorable years I have found a few individuals at 650 m or even lower. In contrast to the new species, most members of the *Suffruticosi* group occur on sandy soils of outwashes, alluvial fans, stream bottoms, and valley floors (T.M. Barkley, pers. comm. 1991).

The Pinacate region is within Shreve's (1951) Lower Colorado phytogeographic region of the Sonoran Desert. The higher elevations of the Pinacate complex are surrounded by extremely arid, expansive lowland desert with unpredictable precipitation (Ezcurra, Equihua, & Lopez-Portillo 1987; Felger 1980; Lynch 1981, Ezcurra & Rodrigúes 1986). The higher elevations undoubtedly receive significantly greater and more predictable rainfall than the lowland regions, and temperatures are certainly cooler with a number of nights of freezing weather each year (May 1973; Ezcurra & Rodrigúes 1986).

The almost chaparral-like desert vegetation at higher elevations of the Pinacate volcanic complex contains a number of isolated taxa not found regionally at lower elevations, and many of them do not occur elsewhere in Sonora or mainland México. These mountaintop islandlike populations, mostly with Californian phytogeographic affinities, for the most part are probably Pleistocene relicts (Van Devender *et al.* 1990). Other species, presumably also Pleistocene relicts, regionally isolated at higher elevations on this mountain include: *Artemisia ludoviciana* Nutt., *Astrolepis cochisensis* (Goodd.) Benham & Windham ssp. *chihuahuensis* Benham, *Astrolepis sinuata* (Lag.) Benham & Windham, *Berberis haematocarpa* Woot., *Bothriochloa barbinodis* (Lag.) Herter, *Bromus berterianus* Colla (= *B. trinii* Desv.), *Cleome isomeris* E. Greene, *Gutierrezia sarothrae* (Pursh) Britt. & Rusby, *Keckiella antirrhinoides* (Benth.) Straw ssp. *microphylla* (A. Gray) Straw, *Opuntia chlorotica* Engelm. & Bigel., *Pellaea mucronata* D.C. Eaton var. *mucronata*, *Penstemon pseudospectabilis* M.E. Jones var. *pseudospectabilis*, *Rafinesquia californica* Nutt., *Rhus aromatica* Aiton var. *trilobata* (Nutt.) A. Gray, *Salazaria mexicana* Torr., *Salvia mohavensis* E. Greene, *Stipa speciosa* Trin. & Rup. var. *speciosa*, *Teucrium glandulosum* Kell., *Zephyranthes longifolia* Hemsl.

The Pinacate volcanic complex supports a flora of approximately 300 native species (Felger, in prep.), of which *Senecio pinacatensis* is the only endemic

taxon. Other regional endemics are low elevation plants from the surrounding dune system, e.g., *Astragalus magdalenae* E. Greene var. *piersonii* (Munz & McBurney) Barneb., *Chamaesyce platysperma* (Engelm.) Shinn., *Croton wigginsii* Wheeler, *Heterotheca thiniicola* (Rzedowski & Ezcurra) B.L. Turner, and *Stephanomeria schottii* (A. Gray) A. Gray (Felger 1980, in prep.; Rzedowski & Ezcurra 1986).

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